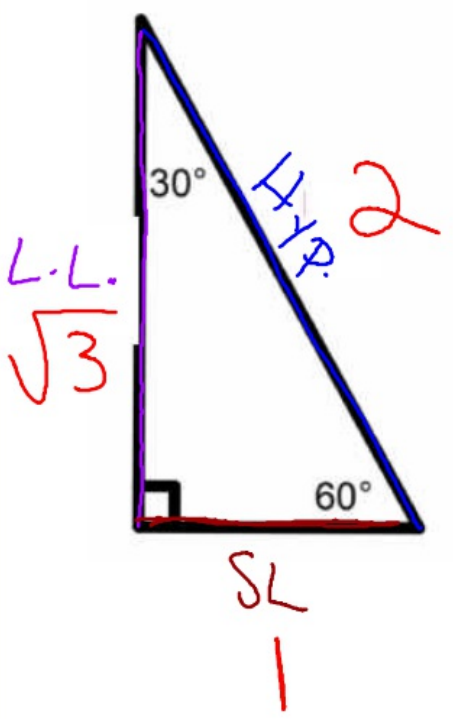
Name: _____ Hour: _____ Date: _____

$30° - 60° - 90°$ Special Right Triangles Notes

A right triangle that has angle measures of $45° - 45° - 90°$ is a "special right triangle". There is a pattern that allows us to know the value of the sides of triangles with little to no calculations!



Key Features:

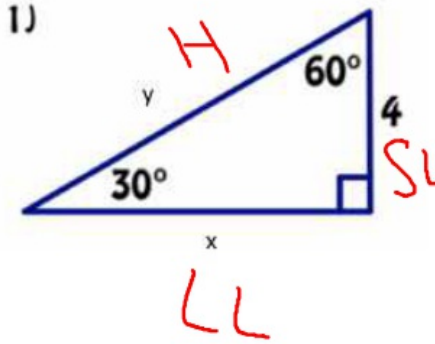
- Hypotenuse: opposite of the right angle
- Long Leg: side opposite of the 60° angle
- Short Leg: side opposite of the 30° angle

Ways to Calculate:

- Hypotenuse = SL · 2
- Long Leg = SL · √3
- Short Leg = $\frac{Hyp}{2}$ OR Short Leg = $\frac{LL}{\sqrt{3}}$

Examples: Use the pattern defined above to determine the missing side lengths of each triangle.

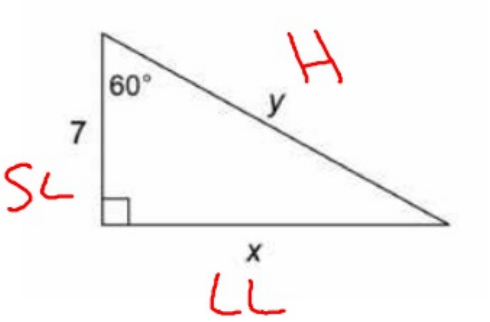
1)



x = $4\sqrt{3}$

y = 8

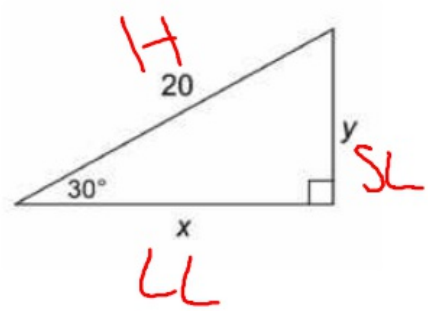
2)



x = $7\sqrt{3}$

y = 14

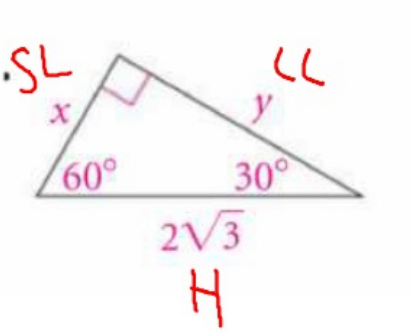
3)



x = $10\sqrt{3}$

y = 10

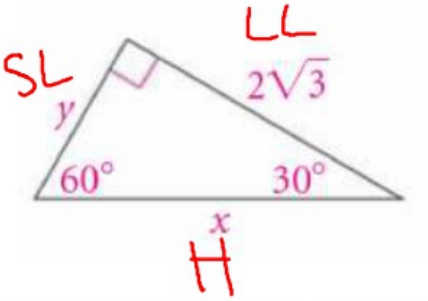
4)



x = $\frac{2\sqrt{3}}{2} = \sqrt{3}$

y = $\sqrt{3} \cdot \sqrt{3} = \sqrt{9} = 3$

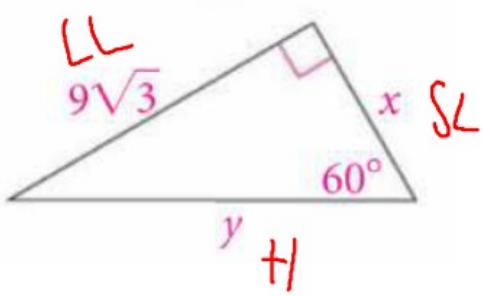
5)



x = 4

y = $\frac{2\sqrt{3}}{\sqrt{3}} = 2$

6)



x = 9

y = 18